DOCUMENT RESUME

ED 170 135 SE 027 582

TITLE	Interdependence: A Handbook for Environmental Education.
INSTITUTION	National Association of Independent Schools, Boston, Mass.
PUB DATE	Feb 79
NOTE	51p.; Not available in hard copy due to copyright restrictions
AVAILABLE FROM	National Association of Independent Schools, 4 Liberty Square, Boston, Massachusetts 02109 ($4.00)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Conservation Education; Curriculum; *Educational Programs; *Educational Resources; *Elementary Secondary Education; *Environmental Education; Instructional Materials; *Program Descriptions; *Science Education; Summer Programs; Surveys

ABSTRACT

The document includes several sections dealing with environmental education. The first section presents a brief description of courses or programs in environmental education offered by schools belonging to National Association of Independent Schools (NAIS). A second section presents expanded descriptions of 9 selected environmental programs. The third section describes summer opportunities in environmental education for teachers and students. A fourth section presents an annotated bibliography of selected textbooks in environmental education. The fifth section is a bibliography arranged by topics of interest to environmental educators. An appendix presents the questionnaire used to gather information on environmental education activities undertaken by NAIS member schools. (RE)

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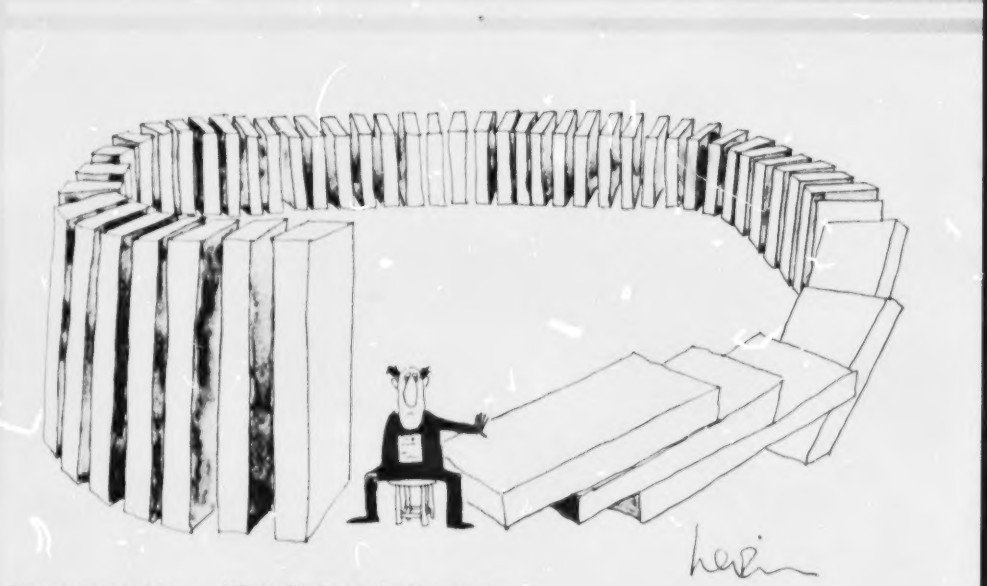
INTERDEPENDENCE

A Handbook For Environmental Education



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NAIS

National Association of Independent Schools

SE 027 582

INTERDEPENDENCE

A Handbook for Environmental Education

Prepared by members of the
NAIS Environmental Education Committee

NATIONAL ASSOCIATION OF INDEPENDENT SCHOOLS
4 Liberty Square, Boston, Massachusetts 02109

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Printed in U.S.A.

Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life: he is merely a strand in it. Whatever he does to the web, he does to himself.

Chief Seattle, 1854

We have met the enemy, and he is us!

Pogo

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Foreword

> We live in an era of rapidly diminishing natural resources, overpopulation, pollution, and other serious mismanagements of the environment. If mankind is to manage the corporate earth responsibly, educators must foster in students the realization that they are a part of the world environment and are individually accountable for its future.

In 1977, the Teacher Services Committee of NAIS commissioned a group to discuss "what ought to be done" in the increasingly important field of environmental education. This group decided that the most important and immediate task was to explore the vast amount of material available.

We began by conducting a survey of existing programs in NAIS member schools, the results of which appear in the pages that follow. This handbook has been compiled by independent school teachers with help from members of the staff of the Institute for Environmental Education, in Cleveland. Its purpose is to organize materials that will be of help to teachers who would like to incorporate some form of environmental education into their existing curriculum.

In no way is this handbook meant to be complete, exclusive, or the last word on the subject. It does, however, draw upon the expertise of people who have worked in or with independent schools and who have some idea about models that are practicable in different settings.

"Cross Section of Environmental Programs," containing capsule descriptions of different approaches to environmental education, is followed by "Expanded Descriptions of Nine Environmental Programs." Clearly, we have made some arbitrary choices in the hope that we would give a somewhat varied view. Our listings of programs, textbooks, and other publications and resources are intended to acquaint the reader with the range of material

available. We are fully aware that there are many other worthwhile possibilities. Finally, we include an appendix summarizing the questionnaire results.

We mean to give enough specific information to stimulate schools to form or expand programs that fit their particular circumstances. We hope that readers who have additions or corrections to the handbook will get in touch with the appropriate current editors of the following NAIS TSC Newsletters: Elementary, Secondary Science, Social Studies, and Middle School. Materials may be sent directly to: TSC Newsletters, NAIS, 4 Liberty Square, Boston, Mass. 02109. Comments on this handbook will be gratefully received by any and all members of the Environmental Education Committee.

Richard P. Hall
Principal, Seven Hills Upper School
Cincinnati, Ohio

NAIS Environmental Education Committee

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With special thanks to the following people at Seven Hills Upper School:
Marie Harbach, Cynthia Hudzik, and Julie Shay

I own one share of the corporate earth, and I
am uneasy about the management.

E. B. White, 1962

I. CROSS SECTION OF ENVIRONMENTAL PROGRAMS

An environmental education questionnaire was sent to over 800 NAIS member schools in February 1978. Of the 173 schools responding, 101 offered some type of environmental education course. A tabulation of the completed questionnaires appears in the Appendix, below.

Listed here are brief descriptions of some of the courses or programs reported. Schools are grouped according to the seven NAIS geographic areas. Descriptions of nine of the most unusual and innovative programs follow in the next section. All of the programs included were chosen on the basis of information supplied through the questionnaire.

W. Dean Hawver
Park-Tudor School

New England

Cushing Academy 39 School St. Ashburnham, Mass. 01430	Grades 9-12, boarding, rural, with 40 acres plus wilderness area at another site. BSCS Green in grades 9 and 10. Ecology course in grades 11 and 12 with special emphasis on students performing contract research for private and government agencies. Third year of such work just completed in monitoring water quality changes in the Nashua River following construction of new sewage treatment plants. Contact Dr. Arthur Johanningsmeier.
Eaglebrook School Deerfield, Mass. 01342	6-9, boarding, rural, 135 acres. Semester course in woodland biology--the natural world around Eaglebrook. Each student picks a site in the surrounding woodlands to study throughout the year and applies knowledge gained in the classroom to a description of the site during the fourth quarter. Contact Larry Yost. Quarter course in alternative energy--society's present stand on energy, future use of sun, development of school's energy policy. Contact Bob Spencer. Quarter course in greenhouse --greenhouse techniques, plant structure,

Eaglebrook (cont.)	physiology, reproduction, propagation. Contact Caron Yost.
Governor Dummer Academy 1 Elm St. Byfield, Mass. 01922	9-12, boarding, rural, 600 acres, 11th and 12th grade ecology and field biology elective featuring several field trips. Contact Fran Mullen.
Hillside School Robin Hill Rd. Marlborough, Mass. 01752	3-8, boarding, rural, 290 acres, environmental education program involving all grade levels and including wildlife study, pond study, and nature trail.
New Hampton School New Hampton, N.H. 03256	9-13, boarding, rural, 1 square mile, 11th and 12th grade environmental education course. Contact Carol Durgy-Brooks.
Pingree School 379 Highland St. South Hamilton, Mass. 01982	9-12, suburban-rural, 60 acres, semester ecology elective for grades 11 and 12. Contact William King.
Saint Anne's School 18 Claremont Ave. Arlington, Mass. 02174	7-12, boarding, suburban, 8 acres, alternate energy/cold weather survival for grades 9-12. Contact Pat Deal.
Westminster School 995 Hopmeadow St. Simsbury, Conn. 06070	9-12, suburban, 200 acres, 11th and 12th grade ecology course. Contact Nicholas McDonald.
Whitby School 969 Lake Ave. Greenwich, Conn. 06830	PS-9, suburban, 34 acres, 7th and 8th grade studies using OBIS materials and Greenwich Audubon activities. Contact James Deary.

East

Darrow School Route 20 New Lebanon, N.Y. 12125	9-12, boarding, rural, 300 acres, three-term elective courses (human ecology, terrestrial ecology, freshwater ecology) for grades 10-12. Contact John Baird.
Little Red School House 196 Bleecker St. New York, N.Y. 10012	K-7, metropolitan, comprehensive schoolwide program for exposing urban children to environment beginning with an eight-day field trip to the country at the end of first grade. Contact Sandra Roche.

The Masters School Clinton Ave. Dobbs Ferry, N.Y. 10522	7-12, suburban, 90+ acres, 12th grade ecology course. Contact Kathleen Yang.
Millbrook School Millbrook, N.Y. 12545	9-12, boarding, rural, ecology-zoo science, featuring a school zoo, for grades 10 and 11. Contact John Rorke.
New York Military Academy Academy Ave. Cornwall-on-Hudson, N.Y. 12520	5-12, boarding, suburban, 325 acres, 12th grade semester on issues of national significance offered in social studies department. Contact Edwin T. Hering.
Peddie School South Main St. Hightstown, N.J. 08520	8-12, suburban, 200 acres, trimester ecology course, elective for grades 10-12. Contact Palmer Bell.
Princeton Day School P.O. Box 75 The Great Road Princeton, N.J. 08540	K-12, suburban, 150 acres, ecology elective for grades 10-12 offered two hours per week for academic year and featuring a library project. Contact Daniel A. Bailey.
Rippowam-Cisqua School R.F.D. 1, Box 488 Bedford, N.Y. 10506	K-9, suburban, 6th grade semester of ecology. Contact Richard R. Beaty.
Rockland Country Day School Kings Highway Congers, N.Y. 10920	5-12, suburban, 22 acres, 8th and 12th grade environmental science course. Contact C. Haitsma.
Stony Brook School Chapman Pkwy. Stony Brook, N.Y. 11790	7-12, suburban, 11th and 12th grade semester elective in environmental biology. Contact Bruce A. Boyce.
The Wardlaw-Hartridge School P.O. Box 1882 Muhlenberg Station Plainfield, N.J. 07060	K-12, suburban, 30 acres, ecology elective for grades 10-12. Contact Ralph Muoio.

Middle Atlantic

Abington Friends School
575 Washington Lane
Jenkintown, Pa. 19046

K-12, suburban, 20 acres, three-trimester course for grades 10-12 covering basic ecology, urban and population studies, and the environment and man. Contact Maria Peters.

Beauvoir
3500 Woodley Rd., N.W.
Washington, D.C. 20016

PS-3, metropolitan, 57 acres, many exposures of an environmental nature integrated into elementary program. Contact Frances R. Borders.

Connelly School of the Holy Child
9029 Bradley Blvd.
Potomac, Md. 20854

9-12, suburban, 14 acres, 11th and 12th grade ecology elective offered on trimester basis. Contact Mrs. Donna Howk

Friends' Central School
68th St. & City Line Ave.
Philadelphia, Pa. 19151

K-12, suburban, 38 acres, introduction to ecology in 6th grade, including a week-long camping trip, 8th grade course in selected topics in ecology, and 12th grade biology II course. Contact Gina Eberly.

Garrison Forest School
Garrison, Md. 21055

PS-12, suburban, 100 acres, ecology course for seniors. Contact Mrs. L. M. Earll.

The Key School
534 Hillsmere Dr.
Annapolis, Md. 21403

K-12, suburban-bay, 15 acres, 7th grade interaction of man and the biosphere, 8th grade lands and waters of Maryland, 10th grade BSCS Green biology with camping-field trips, and 12th grade estuarine biology including camping-field trips and winter waterfowl field trips. Contact Elizabeth Rinker.

Maret School
3000 Cathedral Ave., N.W.
Washington, D.C. 20008

K-12, metropolitan, 7.5 acres, 9th grade lab-oriented environmental science course plus a 9th grade summer stream ecology course. Contact Ronnie Stewart.

National Cathedral School
3109 Wisconsin Ave., N.W.
Washington, D.C. 20016

4-12, metropolitan, two city blocks, two one-semester electives for grades 10-12 in environmental chemistry and ecology. Contact C. R. Manor.

Norfolk Academy
1585 Wesleyan Dr.
Norfolk, Va. 23502

K-12, metropolitan, 70 acres, 9th grade environmental science course. Contact David H. Dike.

Park School of Baltimore
Old Court Rd.
Brooklandville, Md. 21022

Grades K-12, suburban, 100 acres, laboratory and field activities at all levels, with grade 7 having a self-paced lab-oriented course, grade 8 BSCS biology and extensive fieldwork, and grades 10-12 having courses in environmental biology. Contact James R. Howard.

St. Anne's-Belfield, Inc.
2132 Ivy Rd.
Charlottesville, Va. 22901

K-12, suburban-rural, 22 acres, 8th grade environmental science. Contact A. H. Bishop, III.

Valley School of Ligonier
P.O. Box 616
Ligonier, Pa. 15658

K-8, rural, 300+ acres, three-day outdoor experience at local camp for grades 5 and 6. Two- to four-day backpacking trips, outdoor education, rock climbing for grades 7 and 8.

South & Southeast

Baylor School
P.O. Box 1337
Chattanooga, Tenn. 37401

7-12, rural, 700 acres, trimester course for seniors in water and air pollution. Contact Bill Tatum.

Brookstone School
440 Bradley Park Dr.
Columbus, Ga. 31904

K-12, suburban, 45 acres, trimester courses for 11th grade in freshwater ponds and for 12th grade in ornithology. Contact Fred Beal.

Brookwood School
Cardinal Ridge Rd.,
Rte. 3
Thomasville, Ga. 31792

K-12, suburban, 12th grade environmental science, using classic paperbacks. Contact Roy I. King.

Charlotte Country Day
School
1440 Carmel Rd.
Charlotte, N.C. 28211

K-12, suburban, 60 acres, featuring grade 6 science with camp "school in the woods"; high school has environmental earth science laboratory as elective. Contact Mrs. Sallye Richards.

McCallie School
Kyle St.
Chattanooga, Tenn. 37404

9-12, metropolitan, 50 acres, environmental studies elective offered each trimester for grades 10-12. Contact Curtis F. Baggett.

Maclay School 3737 N. Meridian Rd. Tallahassee, Fla. 32303	K-12, rural, 49 acres, advanced biology for grades 11 and 12, man and environment for grade 7 offered by science-social studies department. Contact Mrs. Pat Ashcroft.
Savannah Country Day School P.O. Box 14256 Savannah, Ga. 31405	K-12, suburban, 55 acres, indoor and outdoor activities at all grade levels, with the following course sequence running from grade 7 to grade 12: freshwater ecology, environmental pollution, tides and territories, and seaways exploration. Contact George Sellers or Mrs. Thomas F. Triol.

Midwest

Hawken School Box 249, County Line Rd. Gates Mills, Ohio 44040	K-12, rural, 300 acres, 11th and 12th grade ecology and 12th grade field biology-outdoor leadership. Contact Charles Marsee.
The Miami Valley School 5151 Denise Dr. Dayton, Ohio 45429	K-12, suburban, 17 acres, 9th grade study of earth/environment taught as a one-month intensive course. Contact Ms. M. Heuser.

Southwest

Fountain Valley School Colorado Springs, Colo. 80911	9-12, suburban, 100 acres plus several thousand acres of ranch land, earth science course for 9th grade and emphasis on environmental biology as part of 10th grade course. Contact James Mariner.
St. Mark's School of Texas 10600 Preston Rd. Dallas, Tex. 75230	1-12, metropolitan, 33 acres, environmental science in grades 5-7. Environmental studies, a non-lab course for seniors, featuring three research papers and one independent study project during the year. Contact Harold Van Schaik.
Santa Fe Preparatory School 1101 Camino Cruz Blanca Santa Fe, N.M. 87501	7-12, small town, 11 acres, biology (with some ecology) in 10th grade, ecology, including alternative energy sources, etc., in grades 11 and 12. Contract Elizabeth Roorbach.

West & Northwest

Castilleja School 1310 Bryant St. Palo Alto, Calif. 94301	7-12, suburban, one city block, 8th grade quarter ecology course. Contact Ethel Meece.
St. George's School 2929 W. Waikiki Rd. Spokane, Wash. 99208	K-12, suburban, 400 acres, water analysis course for grades 11 and 12. Contact Gertrude Douglas.
Robert Louis Stevenson School P.O. Box 657 Pebble Beach, Calif. 93953	9-12, suburban, 15 acres, environmental science course for grades 11 and 12 designed to give students a problem-oriented survey of their environment. Contact Jack McAleer.

II. EXPANDED DESCRIPTIONS OF NINE ENVIRONMENTAL PROGRAMS

The following nine programs are presented in more detail than those listed in the preceding section because we feel that each has some unique aspect worthy of special consideration: the "hands on" interdisciplinary approach at Woodstock Country School, the environmental intern program at Seven Hills Upper School, the use of computers at East Woods School, the "wilderness experience" of the Bear Canyon Program at Albuquerque Academy, the Glen Helen program for upper and lower school students at The Columbus Academy, the stewardship of natural resources at University School, the teaching of environmental concerns to the very young (starting with pre-kindergartners) at Kingsbury School, the interdepartmental approach at John Burroughs School, and the construction of a bioshelter at Holderness School. Each program has potential for stimulating our thinking about the vast possibilities in carrying forth effective environmental education.

Phillip Hess
The Columbus Academy

Life Systems Program

Woodstock Country School
South Woodstock, Vermont 05071

The Woodstock Country School, a rural boarding school of some 85 students in grades 9-12 situated on 300 acres in east central Vermont, has initiated a comprehensive Life Systems program with environmental education as its focus, to supplement its traditional curriculum. The program is interdisciplinary in nature, broad in scope, and seeks to educate the student about

the multi-faceted impact our social, economic, and political life has on the environment.

The curriculum emphasizes "hands on" workshop courses in all areas, with each discipline examining the environment from its own special perspective. In English, students examine how American writers perceive nature, how the concept of space developed in the West, and the stress that develops between nature and culture. In social studies, students investigate the development of American cities, the concept of "appropriate technology," and the interrelation of the economic, political, and social spheres with the ecosystem. In science, students pursue ecological studies of their own environment, alternate sources of energy, effects of pollution, as well as related areas of animal and plant physiology, botany, biology, geology, and chemistry. Other course offerings include carpentry, organic gardening, animal husbandry, and regional American crafts.

The Life Systems program not only provides an interdisciplinary curriculum but has also charged the faculty with developing within each student a holistic perspective by taking a systems approach to teaching in all disciplines, using more team teaching, and encouraging cross-disciplinary "topic" meetings in addition to department meetings for teachers. The school also serves as host to the community in environmental education as students increase their participation in local and regional concerns of an ethical-environmental nature.

Because Woodstock is an ungraded school, courses are open to the entire student body, though prerequisite courses are required in some instances. The curriculum is designed to give every student healthy exposure to environmental education before graduating. The school recently received

a grant of $50,000 from the Department of Health, Education, and Welfare to develop its program and plans to publish a preliminary curriculum guide and brief description of the experience of introducing the program to the school in the latter half of 1979. Anyone interested in further information should write to Janet Van Sickle, Director, Life Systems Program.

James H. Nourse
Seven Hills Upper School

Environmental Intern Program

Seven Hills Upper School
5400 Red Bank Road
Cincinnati, Ohio 45227

In the spring of 1978, the Seven Hills Upper School (grades 8-12) participated in the Lower Great Lakes Environmental Intern Program (LEIP) in an effort to establish a comprehensive environmental education program for grades 9-12 that would be interdisciplinary in nature and holistic in approach. One of LEIP's functions is to identify qualified graduate and undergraduate students to serve as the sophisticated, short-term workforce needed to complete specific projects in environmentally related work. Although mainly a service used by businesses, government agencies, and citizen groups, LEIP is an excellent source of expertise for schools interested in carrying out an environmental education program.

The job description for the Seven Hills intern included four major responsibilities: (1) to develop a comprehensive bibliography of environmental literature to support faculty members and students alike in their studies; (2) to devise a progressive curriculum for teaching in environmental areas from grades 9-12 consisting of both a core course in

environmental studies and an interdisciplinary followthrough; (3) to recommend a plan for systematic development of our own 20 acres for ecological studies; and (4) to research and catalogue existing programs in the area that could supplement in-school programs.

The results of our intern's efforts were exciting and infectious. Thanks to her finished bibliography, our library has acquired an excellent comprehensive core of environmental literature. Fruitful discussion among departments of an interdisciplinary curriculum led to specific recommendations for the environmental studies course, which were carried out in the fall of 1978. We have also drawn up some site-development plans. And, finally, our faculty has become acquainted with local agencies and interest groups that run programs from which our curriculum might possibly benefit.

As in most independent schools, the time and energy of our faculty are valued commodities in scarce supply. Because a great deal of both are required to initiate a new program as extensive as one in environmental education, our intern proved particularly valuable in this respect. Her energy coupled with her expertise and enthusiasm for the project, has gotten our program off to an excellent start.

For further information on the Environmental Intern Program, write to Jerome Tone, Institute for Environmental Education, 8911 Euclid Ave., Cleveland, Ohio 44106; for additional information on the Seven Hills environmental program, write to James H. Nourse, Seven Hills Upper School.

James H. Nourse
Seven Hills Upper School

Computer-Assisted Geology

East Woods School
31 Tellow Cote Road
Oyster Bay, New York 11771

East Woods is a K-9 suburban school on a 15-acre site. Programs in environmental education exist at all levels, but the eighth-grade geology course is most unusual in the way that computer programs and scale models are used to depict near-shore erosion and pollution processes. Major topics covered in the course include modern near-shore processes, estuarine and riverine systems, and shelf-break processes.

Computer models are also used for stratigraphy, topography, and palaeontology. The school's current goal is to develop a greater capacity for providing students with materials that they can work on independently. The curriculum is not formalized, and the staff is very interested in working with others who are working in similar areas. More specific information may be obtained by writing to Henry Lockwood at East Woods School.

Phillip Hess
The Columbus Academy

Bear Canyon Program

Albuquerque Academy
6400 Wyoming Blvd., N.E.
Albuquerque, New Mexico 87109

Albuquerque Academy is a metropolitan school having grades 5-12 situated on 350 acres. The school offers a special environmental education program known as the Bear Canyon Program, described here by its director, Mark J. Logsdon.

The Bear Canyon Program was instituted in 1975 because we believe

there is a need for every human being to step aside occasionally from the normal occupations of a complex, hurried, and competitive world. When we take a group of students into the wilderness, our goal is to strip aside some of civilization's artificiality so that they can see themselves and their companions in a new light.

In seeking that goal, we have three principal aims: to develop a sense of community by emphasizing cooperation and minimizing competition, to involve each student in controlled stress situations, and to provide each student with an opportunity to understand and appreciate the natural world surrounding him.

The Bear Canyon Program is based on the conviction that boys and girls can learn in a wilderness environment some of the values that cannot be learned in a classroom: cooperation, self-reliance, love of the natural world. The program began in the 1975-76 academic year with the participation of all students in grades 5-9, and also included the 1976 Junior Class Wilderness Trip. Presently, some aspect of the program is required each year for all students in grades 5-11.

The program is designed around the twin concepts of affective and experiential learning. By taking a group of 10-15 students for five days into the 6,000-acre Elena Gallegos Tract on the rugged west side of the Sandia Mountains, the two full-time instructors can provide instruction in the important skills of handling oneself in the wilderness and still have opportunities to construct for the students problems that will test their ingenuity, self-reliance, or ability and willingness to cooperate with their companions.

Before the student can turn his attention to the more abstract notions

of the program, he must be comfortable in the wilderness. Therefore, particularly in the early years of the program, much time is spent on the skills that will allow the student to be comfortable and safe during his trip. Making and breaking camp, cooking and nutrition, first aid, weather, equipment, and orienteering are emphasized with each new group and are reviewed with all the students, no matter how experienced.

Because any group will have a physical impact on a wilderness area such as Bear Canyon, we ask each group to do a service project during the week. Projects during the first year included working on the cabin, maintaining latrines, establishing trails, and mending fences. We believe that physical labor is educational in the deepest sense.

The most important part of the program revolves around the problems we devise for the students. The idea of setting up problems for students is not original. Many of our notions are drawn from the concepts and activities of Outward Bound: backpacking, climbing and rappelling, initiative tests, and the "solo" experience. Some problems are essentially individual, particularly the climbing and rappelling; others are group problems that require organization, imagination, and cooperation.

There are also cognitive aspects to the program. The student must keep a daily journal, in which he includes not only the details of the day but also his subjective response to the problems. The group does some reading in common, often a short story that deals with ecology, and discusses the reading around the campfire. We offer an introduction to the geology and botany of the area, always emphasizing man's role in the ecology of the canyon. As the Bear Canyon Program evolves, we hope to integrate further our activities with the standard curriculum of the school in an

effort to show our students that learning is not confined to the classroom.

Mark J. Logsdon, Director
Bear Canyon Program
Albuquerque Academy

Glen Helen Program

The Columbus Academy
4300 Cherry Bottom Road
P.O. Box 30745
Gahanna, Ohio 43230

The Columbus Academy, a school of grades 1-12 on a 220-acre site, offers environmental education programs during the academic year at all levels. The lower school uses a nearby woodland for outdoor education activities on a regular basis, and the ninth-grade students do some environmental studies in connection with their introductory science course. The tenth-grade biology course incorporates much outdoor fieldwork, including tree and wildflower identification, and concludes the year with a major outdoor project involving interpretation of the natural success occurring in a woodland that has undergone undisturbed change from a grazed area for about 10 years. The eleventh and twelfth graders have an ecologically oriented earth science course that is available as an elective. In addition, some eleventh and twelfth graders may choose to attend the Glen Helen Outdoor Education Center along with the fourth graders for one week. This experience alternates between spring and winter every other year and has proven very popular for both age groups at both times of the year.

The Glen Helen Outdoor Education Center is located outside Yellow Springs, Ohio, on a 1,000-acre nature preserve. Discovery of concepts relating to interdependence in the natural world is stressed, but the Glen Helen program, as we experience it, has another focus that distinguishes it

from most other outdoor education programs: both lower and upper school students work in a learning climate that offers abundant opportunities for direct laboratory experiences in identifying and resolving real-life problems, for building concepts and developing concerns about man and his natural environment, and for getting back in touch with those aspects of living where our roots were once firm and deep. We accomplish this in small trail groups guided by trained naturalists. We take two field trips into the glen each day in addition to such projects and activities as caring for injured birds and animals, learning pioneer skills, taking night hikes, calling owls, and preparing natural foods.

Perhaps the most important part of the outdoor experience at Glen Helen is the opportunity for the fourth graders and the older students to get to know one another in a way that isn't possible in the usual campus situation. The familiarity that develops between the age groups creates an awareness of one another that carries over well after the experience itself has passed. For the first time the younger students have a sense of who the boys are who play on the sports team or write for the school newspaper, and the older students come to understand and respect better the active minds of the younger members of the school. We feel that this type of exposure between age groups is important and that our program is unusual in the way it is accomplished.

For information on the Glen Helen program, write to Barbara Klausing at The Columbus Academy. For information about the academy's overall program, write to Phillip Hess.

Phillip Hess
The Columbus Academy

Conservation Education

University School
2785 S.O.M. Center Road
Chagrin Falls, Ohio 44022

Abundant field materials exist for conservation education at University School. A large tract of wild and semi-wild land surrounds the school, and though this is only one of the unique features of the campus, it is a very important one; over 100 acres of wooded land and water are involved. Viewed from the standpoint of natural science and natural resources, this property has many attributes that make the school unusual among colleges and secondary schools.

Among these attributes are forests and meadows in several stages of development, varied topography, and a stream and lake complex that form a continuum with the field studies property of Case Western Reserve University, since both properties are located on the same drainage basin. Thus the two areas are open to scientific study by University School and Case Western Reserve students alike.

A number of natural features on the University School campus have been carefully exploited to incorporate fieldwork into a formal course in natural resource conservation and to provide varied materials for courses in biology and independent student research. Among the projects developed the following are judged to be of major importance.

1. A spring mapling program and associated forestry studies conducted in the natural resources course.
2. A soils properties and mechanics laboratory.
3. Involvement in the American Tree Farming Program through spring planting of trees and shrubs for erosion control and demonstration of good forestry practice.

4. An apiary with an observation hive.

5. Membership in the Federal Migratory Bird Banding Program of the U.S. Fish and Wildlife Service.

6. An aquaculture program involving construction of a trout hatchery and attendant management of fish stocks both in the hatchery and in the school's lake and lower outlet stream.

7. A technical consulting service to regional pond owners who wish to manage their waters for trout--the trout being supplied by the University School hatchery.

8. Direct attention to land and water quality management problems on campus, such as soil erosion and water pollution control in the trout water system.

9. The formation of a student, faculty, and administration environment council with technical advisory powers and duties.

These activities, which have taken eight years to develop, amount to a large and continuous output of time and energy on the part of approximately 100 students and three teachers at University School.

Financial support of several thousand dollars has been granted by the school's administration and by two separate granting agencies, and it is worth noting that activities in aquaculture and forestry now generate significant income from the sales of trout, cordwood, and maple syrup, which has been used to defray program operating costs for the past three years.

Terry Harmon
University School

Environmental Studies Program

Kingsbury School
5000 Hosner Road
Oxford, Michigan 48051

The Kingsbury Environmental Studies Program includes all of the students in the school (grades pre-K through 8). The goals of our program are to develop in our students an appreciation of the natural world and knowledge of how tenuous the balance of nature really is. This all-school program builds on and adds to each previous year's experiences. Children in prekindergarten through grade 5 meet with a naturalist one hour per week.

The prekindergarten program, for four-year-olds, can best be described as a "wonders of nature" program involving walks, searches, touching and feeling, and the like. The kindergarten program is also based on sensory stimulation and use. The kindergartners also plant their own garden in the spring, which they harvest as beginning first graders.

The first-grade program is based primarily on the study of individual organisms. The second-grade program is concerned with interdependence and food cycles. Thus second graders are also our winter birdfeeder builders and spring gardeners. In the third grade, our major emphasis is a year-long pond study, starting with making mini-ponds in late fall and keeping them in the classroom during the winter. The fourth grade studies weather and climate and their effect on organisms. The fifth grade progresses to studies of communities and biomes, with field trips to observe as many as possible.

The Environmental Studies Program for grades 6-8 is included in our regular middle school science program. These classes meet with a naturalist-science teacher for six 45-minute periods each week, as follows. The sixth

grade starts the year with an overview unit and finishes the year with a population study unit. The seventh grade studies a mixture of standard biology and ecology during the entire year. The eighth-grade science program is based on studying water and air pollution problems and finding solutions to them.

In addition to these programs, most students are involved from time to time in all-school ventures, such as our annual maple syrup production and pancake breakfast, school gardening, and roadside refuse cleanup. We also go on an average of seven camping trips per year.

Jay Maki
Kingsbury School

Interdisciplinary Environmental Study

John Burroughs School
755 S. Price Road
St. Louis, Missouri 63124

John Burroughs School, a suburban day school of some 550 students in grades 7-12, offers the following courses in its interdepartmental approach to environmental study.

1. Seventh-grade students in two science classes have units that stress energy conservation.

2. Students in one seventh-grade and one eighth-grade mathematics class have units on topographic study, which prepares them to appreciate Ozark Hills geography in conjunction with their Drey Land experience.

3. Students in one ninth-grade and one tenth-grade geometry class study the volume of water flowing at Sinkin Creek and note the impact of the water volume on the biotic and abiotic aspects of the creek. They now have six years of data compiled.

4. Students in one teacher's ninth- and tenth-grade world history classes are given numerous analogies comparing ancient or recent civilization's energy and resource problems with contemporary problems.

5. Students in all tenth- and eleventh-grade advanced algebra and trigonometry classes are given a unit on exponential and logarithmic functions to solve problems dealing with population growth, radioactive decay, and loudness of sound (noise pollution).

6. The eleventh-grade U.S. history elective--environmental economics and energy--has three texts, 12 readings, and five hours of videotape programs all dealing with the cost of maintaining the environment and problems associated with energy conservation and new sources of energy and their social, political, and economic implications.

7. In tenth- and eleventh-grade Biology II, a full trimester is devoted to ecological science, which includes an eight-year, ongoing study of Deer Creek's biotic and abiotic factors. In addition, energy flow, population dynamics, and demographic transition are studied.

8. In eleventh- and twelfth-grade Advanced Placement biology, a unit is devoted to topics similar to those above, which includes two films (one made at Burroughs) on population problems related to resource needs.

9. All senior English students must take a unit on city life, which requires them to design an ideal community that must meet three criteria: awareness of energy problems, minimal use of the private automobile, and avoidance of urban sprawl to save energy and resources.

Thus our science, mathematics, English, and social studies departments have at least some students who must deal with environmental problems through a formal discipline in each of the six years of their Burroughs experience.

Edward W. Cissel, Headmaster
John Burroughs School

A Bioshelter

Holderness School
Plymouth, New Hampshire 03264

Under a Dodge Foundation grant, Holderness School (a rural coeducational boarding school of some 210 students) in the fall of 1978 began to build an ecologically sound, energy-efficient dwelling. The "bioshelter,"

so-called because of an attached vegetable- and fish-producing greenhouse, is to serve as a faculty residence and as the school's Center for Environmental Education. A crew of 14 students worked on the low-cost (less than $10,000) structure during their afternoon sports time, aided by ecology and environmental earth science classes as well as by weekend volunteers.

The bioshelter differs from conventional housing in that it is designed to work with nature by responding to environmental elements in such a way as to foster a harmony with the natural world. It uses the sun "passively" for heating, food production, and interior light. Air infiltration is minimized in the winter through heavy insulation and a northern berm wall and maximized in the summer through properly placed vents. Deciduous trees shade the bioshelter in summer, yet, with leaves gone in winter, permit ample insolation. Greywater is purified through a filter system and fed by gravity to the greenhouse as irrigating water. A composting toilet recycles human and garbage wastes into reusable compost for the garden. The attached greenhouse is designed to conserve energy, while a woodstove during periods of sunless skies provides a renewable and self-sufficient source of supplementary heat.

The food-producing and energy-storing unit is economical and only slightly vulnerable to inflation and conventional food shortages. In addition to increasing self-sufficiency, the bioshelter may help to stimulate local solutions to shelter, food, and energy problems. Finally, and perhaps most important, the Holderness bioshelter represents an alternative environmental architecture that can teach us all about the larger workings of nature.

A small outdoor-oriented independent school, Holderness is blessed

by many acres of forests, fields, and streams. The new Center for Environmental Education will provide wide-ranging nature studies, from field investigations to debates on local environmental issues, from outdoor education to historical studies of man and nature. Through such diverse approaches, the center hopes to foster an appreciation among students and community members for man working with nature as part of the natural order rather than man as separate from and above nature. Students will thus be encouraged to become stewards of the earth.

Bartley B. Nourse, Jr.
Holderness School

III. SUMMER OPPORTUNITIES FOR TEACHERS AND STUDENTS

The National Science Foundation (1800 G St., N.W., Washington, D.C. 20550) publishes a comprehensive list of all NSF-funded programs for high school students. The National Association of Independent Schools runs periodic workshops for teachers; write to the NAIS office, 4 Liberty Square, Boston, Mass. 02109, for information. Virtually every state university has an environmental education program that either offers courses to meet teachers' needs or has professionals who can direct you to programs of merit in your area.

Not to be overlooked are the growing number of nature centers, which offer a variety of services and programs. Depending on the specific center, offerings may include summer classes or workshops and evening or weekend programs for individuals or an entire class. Nature centers are generally run by professional educators or knowledgeable volunteers, who can direct you to the program you desire if they cannot provide it.

The presence or absence of a specific program in the following listing implies neither approval nor disapproval by our committee. The vast number of established programs and our limited space make this section necessarily brief. Our purpose is to give an impression of the breadth and depth of the opportunities available.

Chewonki Foundation
Wiscasset, Me. 04578

The Chewonki Foundation offers residential camping, natural history programs, wilderness trips, and teacher workshops.

Coldspring Harbor Laboratory
Nature Study Program
P.O. Box 100
Cold Spring Harbor, N.Y. 11724

The Coldspring Harbor Laboratory and the Long Island chapter of the Nature Conservancy have offerings for students from ages seven to sixteen. Included are general nature study for children under age seven, bird study for ages ten and eleven, elementary geology for ages eight through ten, and marine biology for ages twelve through sixteen. Nature photography is offered at a variety of age and skill levels, as is adventure education, which includes canoeing, hiking, biking, and sailing trips.

Earthwatch
10 Juniper Rd.
Box 127
Belmont, Mass. 02178

Earthwatch, a nonprofit organization, offers a large variety of programs for interested individuals ranging from sixteen to seventy-five years of age. The programs involve helping scientists and research scholars fund and mobilize research expeditions in such areas as anthropology, marine science, ecology, history, and art. The expeditions go all over the world, from Black Canyon in California to Kenya, Greece, Sweden, Pakistan, Peru, and Ecuador, to name just a few of the over 50 projects and areas listed in Earthwatch's current literature.

Strathcona Park Lodge
Outdoor Education Society
Box 2160
Campbell River, British Columbia
Canada

Strathcona Park Lodge, on the western Canadian coast, offers a great variety of outdoor education and recreation programs for individuals and families.

Opportunities there range from canoe camping, wilderness survival, log and timber building, backpacking, and health and preventive medicine to courses on the lifestyles, arts, myths and legends, and crafts of the Indian tribes indigenous to the area.

The Student Conservation Association, Inc.
P.O. Box 550
Charlestown, N.H. 03603

The Student Conservation Association offers unique opportunities for volunteer students in nearly 50 areas around the country. Work projects are diverse, ranging from building shelters or assuming ranger duties to maintaining trails, leading tours, or assisting park naturalists. The opportunities are almost endless.

Yellowstone Institute
Box 515
Yellowstone National Park, Wyo. 82190

The Yellowstone Institute has programs designed primarily for teachers and college-age students. Courses cover the specific mammal and bird life of the area plus the geology of Yellowstone National Park. Other specialized programs that make use of the setting of Yellowstone are geothermal energy and hydrothermal activity, astronomy, aquatic ecology and water quality evaluation, educational and recreational uses of public lands, horse packing and its impact on the wilderness, and watercolor painting in the natural world. College credits are available for these courses at the undergraduate level and, in many cases, at the graduate level.

Additional summer opportunities are offered by the following organizations.

The Academy of Natural Sciences of Philadelphia, Nineteenth and the Parkway, Philadelphia, Pa. 19103

Aullwood Audubon Society Center, 1000 Aullwood Rd., Dayton, Ohio 45414

Colorado Adventuring, P.O. Box 293, Westcliffe, Colo. 81252

Hopkins Summer School, 986 Forest Rd., New Haven, Conn. 06515

Massachusetts Maritime Academy, P.O. Box D, Buzzards Bay, Mass. 02532

Montclair State College, New Jersey School of Conservation, Branchville, N.J. 07826

National Audubon Society, 613 Riversville Rd., Greenwich, Conn. 06830

Teton Science School, Box 68, Kelly, Wyo. 83011

University of Rhode Island, Division of Marine Resources, Narragansett, R.I. 02882

Woodberry Forest Summer School, Woodberry Forest, Va. 22989

Woodlands Institute, Spruce Knob Mountain, Cherry Grove, W. Va. 26803

Yosemite Institute, Yosemite National Park, Calif. 95389

J. Garrett Davis
Cincinnati Country Day School

IV. ANNOTATED LIST OF SELECTED TEXTBOOKS

Andrews, William A., ed. Contours: Studies of the Environment. Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632. A series of five separate and self-contained paperbacks including text and lab.

1. A Guide to the Study of Environmental Pollution. 1972.
2. A Guide to the Study of Freshwater Ecology. 1972.
3. A Guide to the Study of Soil Ecology. 1973.
4. A Guide to the Study of Terrestrial Ecology. 1974.
5. A Guide to Urban Studies. 1976.

Topics

1. Physical, chemical, and biological aspects of water pollution
   Air pollution
2. Limnology: nature of ponds and lakes
3. Soil ecosystem
   Origin and nature of soil
   Life in the soil: macrofauna, microorganisms
4. Major biomes of North America, basic ecological principles
5. Urban ecosystem
   Type and location of urban communities
   Growth of urban communities
   Man and the urban landscape
   Alternatives for the urban environment: benefits and costs

Format

Basic principles
Field studies (short and long) and/or lab studies
Case studies
Research topics

Reading level

High school, possibly middle school

Comments

Writing and graphics are clearly presented, and end-of-chapter questions are included. Standard high school chemistry lab equipment is necessary for some field and lab work. Directions are given for building several pieces of equipment.

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Busch, Phyllis S. Urban Environment. No date. J. G. Ferguson Publishing Co., 100 Park Ave., New York, N.Y. 10017.

Topics

Unit I: Living things are products of their heredity and environment.

Urban Environment (cont.)

Topics
Unit II: Living things are interdependent with one another and with the nonliving environment.
Unit III: Changes are constantly going on in living and nonliving things.
Unit IV: Human behavior is affected by where and how people live, work, play, and organize their activities.

Format
Concept
Purpose
Teaching the lesson. Motivation and development. Indoor and outdoor
Extending the lesson at home
Behavioral evidence for achievement
Materials needed
Background information

Reading level
Teachers of K-3 and others planning activities for young children

Comments
Detailed suggestions and behavioral objectives should be helpful, especially for teachers new to the field.

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Cummings, Michael. Enjoying Nature with Your Family. 1977. Crown Publishers, Inc., 419 Park Ave., South, New York, N.Y. 10016.

Topics
Looking at nature
Aquatic life
Birds
Mammals
Small animals and insects
Trees
Herbaceous plants
Rocks and scenery
Technical information
Farm animals and crops. Edible plants

Format
Approximately 80 activities, each on facing pages. Formulas and references included.

Reading level
Activities suitable for all ages. Especially designed for adults or older children to use with young children.

Enjoying Nature (cont.)

Comments
Many nature activities were considered an essential part of education for our parents and grandparents. These projects are up to date, scientifically accurate, and beautifully illustrated. Lots of building, hiking, and exploring.

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Cunningham, John D. Biology: You and Your Environment. 1976. D. C. Heath & Co., 125 Spring St., Lexington, Mass. 02173. Student record manual also available.

Topics
The usual topics of general biology, with emphasis on human and environmental aspects.

Format
Text includes lab activities
Summaries
Self-evaluation
Behavioral objectives for student in each chapter
Teacher's edition includes pacing strategies for various ability levels, equipment and supply sources, audiovisual materials, career information. Also, detailed background information.

Reading level
High school

Comments
Author uses biology as the central environmental course.

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Russell, Helen Ross. Ten-Minute Field Trips, A Teacher's Guide: Using the School Grounds for Environmental Studies. 1973. J. G. Ferguson Publishing Co., 100 Park Ave., New York, N.Y. 10017.

Topics
Plants
Animals
Interdependence
Physical science
Ecology
Earth science

Ten-Minute Field Trips (cont.)

Format
Topics
Related classroom activities
Teacher preparation
Field trip possibilities
Bibliography for teachers and students

Reading level
Primarily for teachers of elementary or middle school. May be adapted for high school.

Comments
Many environmental activities for emphasizing basic principles, building interest, and developing observation skills.

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Smith, Robert L. Ecology and Field Biology. 1966; 2d ed., 1974. Harper & Row, 10 E. 53 St., New York, N.Y. 10022.

Topics
Ecosystems and communities
Aquatic and terrestrial habitats
Population ecology
Natural selection and speciation
Behavior of animals

Format
Text and suggested field activities
Bibliography
Identification aids
Journals
Bibliography of statistical methods
Environmental measurements
Studies of plant and animal populations
Methods for studying animal behavior

Reading level
College or advanced high school. Assumes general biology, especially botany.

Comments
Author emphasizes the need for fieldwork in the education of a well-rounded scientist.

Francis J. Clark, III
Seven Hills Upper School

V. BIBLIOGRAPHY

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How To Know the Aquatic Plants. 1969. Hardcover, $5.95.
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Organizations

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The Nature Conservancy, 1800 N. Kent St., Suite 800, Arlington, Va. 22209. Publishes The Nature Conservancy News, protects lands, provides long-term stewardship for conservancy preserves; active in education for safeguarding of and data gathering in natural areas. Student stewardship program for high school students.

Sierra Club, 430 Bush St., San Francisco, Calif. 94108. Films, special exhibits, and teaching materials. Local chapters have speaker programs and sponsor outings and trips.

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Catalogues

ERIC/SMEAC (Educational Resources Information Center/Science, Mathematics and Environmental Education), 1200 Chambers Rd., Floor 3, School of Education, Ohio State University, Columbus, Ohio 43221. Retrieval system for dissemination of current information and publications related to environmental education generally. Bibliographies, catalogues, lists of programs, etc.

U.S. Department of Agriculture, 14th St. and Independence Ave., S.W., Washington, D.C. 20250. Publications list available at minimal cost.

U.S. Department of the Interior, C St., Washington, D.C. 20240. Publications list available at minimal cost.

U.S. Government Publications, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Publications list available at minimal cost.

Yellow Pages of Learning Resources, ed. Richard S. Wurman. MIT Press, 28 Charlton St., Cambridge, Mass. 02142.

Rosemary Bodolay
Thomas Offutt
Julie Shay

We travel together, passengers on a little spaceship
dependent on its vulnerable reserves of air and soil;
all committed for our safety to its security and peace;
preserved from annihilation only by the care, the work,
and the love we give our fragile craft.

Adlai Stevenson

Appendix

Environmental Education Questionnaire

(Sent to all NAIS members--over 800--in winter 1978; 173 responses)

1. NAME OF SCHOOL

2. TYPE OF SCHOOL--see note a, below

3. PRESENT STUDENT ENROLLMENT--see note b

4. CLASSIFICATION OF AREA in which your school is located--see note a

5. APPROXIMATE SIZE OF CAMPUS--see note c

6. Does your school offer an environmental education course? Yes 101 No 72 (if no, proceed to question 9; if yes, please answer the following by checking all appropriate categories)

   What do you do? (check all appropriate items)

   78 indoor classroom activities (on campus)

   60 indoor laboratory activities (on campus)

   57 field trips (off campus)

   53 outdoor classroom activities (on campus)

   49 outdoor laboratory activities (on campus)

   42 field projects

   32 library projects

   27 laboratory projects

   24 outside speakers

   ____ other (full week off campus, films, history of school area, canoe trips, weekend trips, etc.)

   Answers to column headed "% of total weekly class time" for each of the above varied.

   Specify text materials used (see "Annotated List of Selected Textbooks," above)

   Course offered: 48 academic year, 24 semester, 5 summer, 11 trimester

   Enrollment: answers varied greatly

7. GRADE LEVELS OFFERING ENVIRONMENTAL EDUCATION. Answers varied from preschool to postgraduate. Most were offered by the science department, although social studies and physical education were other common possibilities.

8. If you answered yes to question 6, complete the following, checking types of materials and activities you have found most helpful in preparing and presenting courses.

73	magazine articles	31	35mm slides
68	textbooks	26	museums
61	books by environmentalists	24	newsletters
60	newspaper articles	17	film loops
58	wild areas	17	workshops
50	visits	17	summer programs
48	16mm films	13	bibliographies
36	filmstrips	13	special programs (OBIS, etc.)
33	parks	5	model programs (as used by other independent schools)
32	AV materials		

Other: resource persons (2), sewage plant visits (2), videotapes, university seminars, overhead projectors, etc.

9. If you answered no to question 6, which types of materials/activities would you most like to have information about? (rank by order: 1 = most wanted, 2 = next most wanted, etc., for as many items as would interest you)

61	model programs (as used by other independent schools; 46 respondents marked this as their first choice)	12	books by environmentalists
		11	visits
		6	magazine articles
37	workshops	6	wild areas
33	textbooks	6	35mm slides
23	special programs	5	filmstrips
22	AV materials	5	film loops
20	bibliographies (up to date)	4	parks
18	summer programs	3	museums
14	newsletters	1	newspaper articles
14	16mm films	___	other (syllabi, winter activities, anything free!)

10. We are seeking information on several model programs on environmental education. . . . If you offer a program you believe is unique and might inspire your colleagues, please attach a short course description--see "Cross Section of Environmental Programs" and "Expanded Descriptions of Nine Environmental Programs," above

11. Would your school be willing to contribute toward the expenses of a traveling consultant in environmental education?

Of the 101 with a program	Of the 72 without a program
56 no	42 no
16 yes	10 yes
10 maybe	3 no answer
5 need more details	6 maybe
3 expense hard to justify	4 more information needed
1 don't need consultant	2 doubtful
1 have ample material & sources	1 feel environmental education more suited to junior high school
1 enjoy working out own program	
1 don't know	1 feel instructors have adequate background

12. Would your school be interested in exchanges (materials, programs, students) dealing with environmental education with a school in another part of the country?

Of the 101 with a program	Of the 72 without a program
73 yes	35 no
18 no	22 yes
6 no answer	15 no answer
2 maybe	
1 doubtful	
1 not practical	

13. Does your school have any summer programs dealing with the subject of environmental education?

Of the 101 with a program	Of the 72 without a program
72 no	63 no
22 yes	6 yes
7 no answer	3 no answer

(Many respondents reported that they were developing programs.)

14. Do you know of any summer programs offered? If so, please give information . . . (See "Summer Opportunities for Teachers and Students," above)

Notes

a. Of those indicating an environmental education program, 37 were K-12 schools, 22 were 9-12, 5 were K-9, 4 were K-8, 11 were 7-12, 3 were 5-12, 3 were PS-12, and the rest represented some other combination.

Of these same schools, 28 were suburban coed day, 5 suburban coed boarding, 11 metropolitan coed day, 7 rural coed day, 9 rural coed boarding, 8 suburban coed boarding and day, and the remainder were some other combination or did not report.

Of those indicating no environmental education program, 24 were K-12, 11 were 9-12, 10 were 7-12, 5 were K-8, 4 were 8-12, and the rest were some other combination.

Of these same schools, 7 were metropolitan coed day, 2 rural coed day, 8 rural coed boarding, 4 rural coed boarding and day, and the remainder some other combination.

b. Enrollment

Of the 101 with a program		Of the 72 without a program	
1-99 students	8	1-99 students	6
100-199 students	17	100-199 students	14
200-299 students	16	200-299 students	17
300-399 students	19	300-399 students	12
400-499 students	10	400-499 students	9
500-599 students	11	500-599 students	6
600+ students	19	600+ students	7
no answer	1	no answer	1

c. Size of campus

Of the 101 with a program		Of the 72 without a program	
up to 5 acres	8	up to 5 acres	14
5-19 acres	23	5-19 acres	13
20-99 acres	34	20-99 acres	24
100-199 acres	7	100-1,000 acres	10
200-299 acres	6	3,000 acres	1
300-399 acres	7	30,000 acres	1
400-499 acres	1	40,000 acres	1
500-599 acres	0	45,000 acres	1
600+ acres	4	no answer	6
no answer	11		

c. Size of campus (cont.)

Of the 101 schools with a program, sizes ranged from 2 buildings to 1 square mile.

Of the 72 without a program, sizes ranged from 1 building to 45,000 acres.

d. States represented by returns and by program (over 58% of those replying indicated a course of some type).

	Course	No course		Course	No course
Alabama	0	2	New York	13	6
Arizona	1	2	North Carolina	2	2
California	4	8	Ohio	3	2
Colorado	1	0	Oklahoma	1	0
Connecticut	5	5	Pennsylvania	11	1
Dist. of Columbia	3	0	Rhode Island	0	2
Florida	2	1	South Carolina	0	1
Georgia	4	2	Tennessee	4	2
Illinois	2	2	Texas	2	0
Indiana	1	0	Vermont	1	0
Kentucky	0	1	Virginia	2	5
Maine	0	2	Washington	1	1
Maryland	7	0	West Virginia	0	1
Massachusetts	11	10	Wisconsin	1	0
Michigan	4	3	Virgin Islands	1	0
Minnesota	1	0	Alberta	1	0
Missouri	1	1	Ontario	1	0
New Hampshire	2	1	Quebec	0	1
New Jersey	6	5	Norway	0	1
New Mexico	2	1	Philippines	0	1